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**V210 Datacon Master VME Module  
Test Procedure  
(v210TestProcedure.doc)**

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## **1.0 New Module Configuration**

The following steps must be performed for new V210 Modules.

1. Solder wire jumpers to configure the serial number. JP3 provides 5 serial number vias, SN4, SN3, SN2, SN1 and SN0. Solder jumper wires to provide the desired serial number according to the following table. IN indicates that a wire jumper is installed, OUT indicates that the vias remain open.

<b>Serial Number</b>	<b>SN4</b>	<b>SN3</b>	<b>SN2</b>	<b>SN1</b>	<b>SN0</b>
1	IN	IN	IN	IN	OUT
2	IN	IN	IN	OUT	IN
3	IN	IN	IN	OUT	OUT
4	IN	IN	OUT	IN	IN
5	IN	IN	OUT	IN	OUT
6	IN	IN	OUT	OUT	IN
7	IN	IN	OUT	OUT	OUT
8	IN	OUT	IN	IN	IN
9	IN	OUT	IN	IN	OUT
10	IN	OUT	IN	OUT	IN
11	IN	OUT	IN	OUT	OUT
12	IN	OUT	OUT	IN	IN
13	IN	OUT	OUT	IN	OUT
14	IN	OUT	OUT	OUT	IN
15	IN	OUT	OUT	OUT	OUT
16	OUT	IN	IN	IN	IN
17	OUT	IN	IN	IN	OUT
18	OUT	IN	IN	OUT	IN
19	OUT	IN	IN	OUT	OUT
20	OUT	IN	OUT	IN	IN
21	OUT	IN	OUT	IN	OUT
22	OUT	IN	OUT	OUT	IN
23	OUT	IN	OUT	OUT	OUT
24	OUT	OUT	IN	IN	IN
25	OUT	OUT	IN	IN	OUT
26	OUT	OUT	IN	OUT	IN
27	OUT	OUT	IN	OUT	OUT
28	OUT	OUT	OUT	IN	IN
29	OUT	OUT	OUT	IN	OUT
30	OUT	OUT	OUT	OUT	IN
31	OUT	OUT	OUT	OUT	OUT

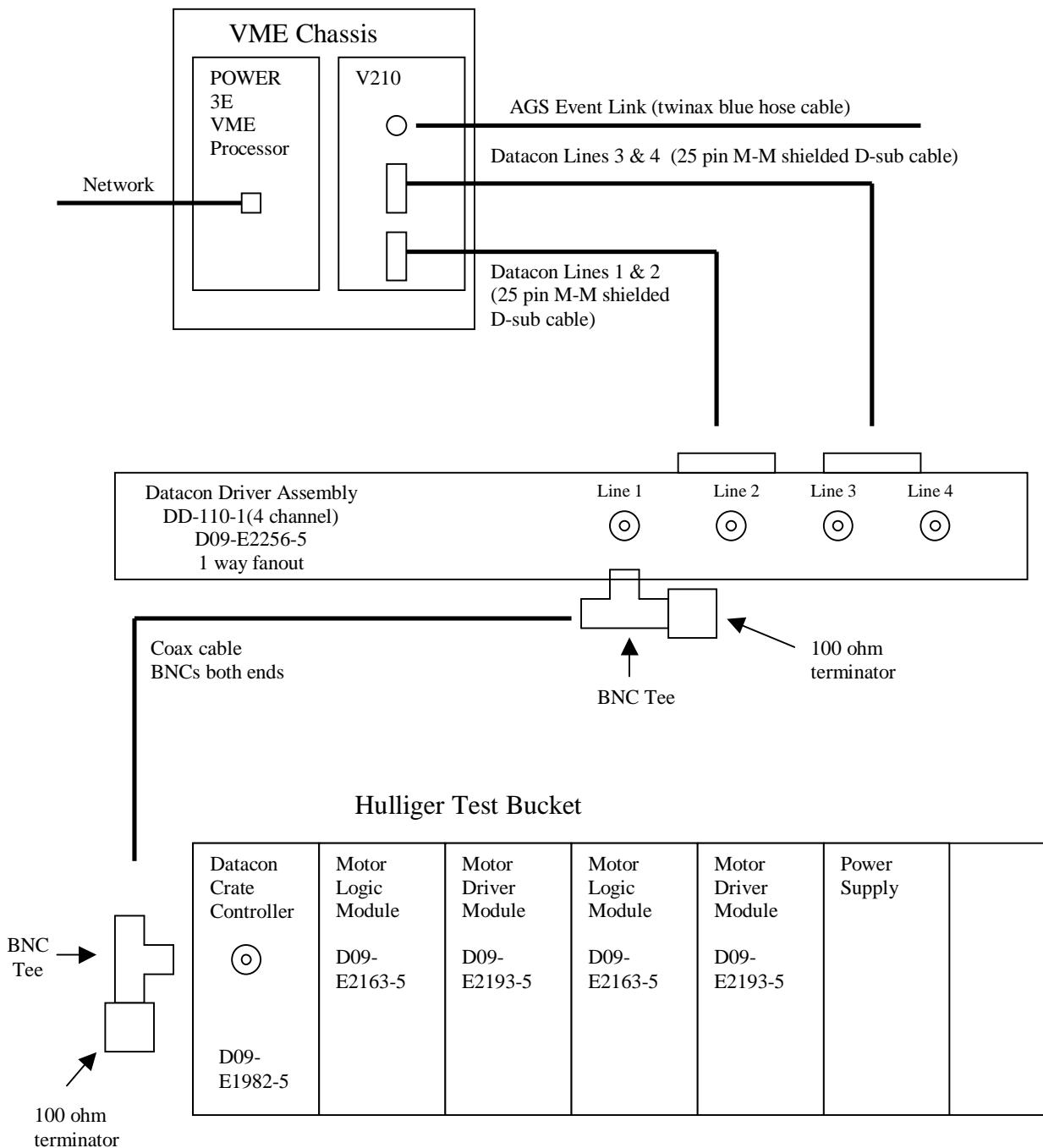
2. Program the module gate arrays and firmware according to:

D09-E2979    V210 Datacon Master Programmed Assembly

3. Mark the PC board with the serial number and assembly revision.

## 2.0 Test Setup Hardware

Configure the test setup hardware as shown in the following diagram.



### **3.0 Module Test Procedure**

1. Configure the V210 module for base address 0x2800000.  
A22, A24, A26, A27, A28, A29, A30, A31 jumpers IN.  
A23, A25 jumpers OUT.
2. Insert jumper at J1 for Phase Lock Loop circuit.
3. Insert the V210 module in a VME chassis with a POWER 3E processor.
4. Turn on all test equipment power.

Expected results:

- a. The V210 CPU FAIL LED is off and the CPU RUN LED is on, indicating that the i960 processor firmware program is executing as expected.
  - b. The V210 NO LOCK LED is off indicating that the event link interface circuit is detecting a carrier signal in the expected frequency range.
5. Disconnect the Event Link cable
- Expected result: The V210 NO LOCK LED is on indicating an event link carrier frequency error.
6. Re-connect the Event Link cable
- Expected result: The V210 NO LOCK LED is off indicating that the event link interface circuit is detecting a carrier signal in the expected frequency range.
7. Connect a terminal to the Processor using either a serial port connection or a networked X-terminal connection.
  8. View the VME ID and the firmware date by entering the following vxWorks command.

-> d 0xc2900000, 128, 1

Expected results:

- a. The V210 VME Select LED flashes.
- b. The output produced is similar to the following.

```
-> d 0xc2900000, 128, 1
c2900000: 2e 56 2e 4d 2e 45 2e 49 2e 44 2e 42 2e 4e 2e 4c      * .V.M.E.I.D.B.N.L*
c2900010: 2e 56 2e 32 2e 31 2e 30 2e 00 2e 00 2e 00 2e 00 2e 00  * .V.2.1.0.....*
c2900020: 2e 00 2e 41 2e 00 2e 00 2e 30 2e 30 2e 32 2e 30      * ...A....0.0.2.0*
c2900030: 2e 00  * .....*
c2900040: 4d 61 79 20 20 36 20 32 30 30 34 2e 2e 2e 2e 2e      *May 6 2004....*
c2900050: 31 35 3a 31 36 3a 34 33 2e 2e 2e 2e 2e 2e 2e 2e      *15:16:43.....*
c2900060: 2e      * .....*
```

```
c2900070: 2e *.....*
value = 21 = 0x15
->
```

- c. The expected revision letter and serial number are displayed. In the output shown above the revision letter is A and the serial number is 0020.
- d. The expected firmware revision date and time are displayed. In the output shown above the firmware revision date is “May 6 2004” and the revision time is “15:16:43”.

9. Enter the following commands to load the V210 device driver and test code.

```
-> cd "/operations/agsfec/CurrentRelease/POWER3E/data/config/drivers"
value = 0 = 0x0
-> ld <dtn2Drv
value = 25712344 = 0x18856d8
-> ld <dtnX
value = 25714152 = 0x1885de8
-> ld <dtnStress
value = 24641632 = 0x1780060
-> dtn2Drv
0x174b0a0 (tShell): Installed dtn2Drv, num=17
value = 0 = 0x0
->
```

10. Initialize the V210 Module by entering the following command.

```
-> Xinit
```

Expected results:

- a. The output produced is similar to the output shown below.
- b. The V210 Event Detect LED flashes at the AGS cycle rate, indicating that the AGS T0 and User event codes are being detected.

```
-> Xinit
0x170e5a0 (tShell): New dtnMaster: pDtnMaster=0x177ee70; base32Sram=0xc2900000, lenSram=0x100000
0x170e5a0 (tShell): Config dtnMaster: pDtnMaster=0x177ee70; baseSram=0xc2900000, lenSram=0x100000:
VMEIDBNLV210      A 0020      May 6 2004....15:16:43.....
0x170e5a0 (tShell): dtnMaster args: irqLevel =0x3; intrptStsId=0x50
0x170e5a0 (tShell): dtnMaster config block @ 0xc2a00000
0x170e5a0 (tShell): Created /dtnf0/ OK
0x170e5a0 (tShell): Created /dtnf1/ OK
0x170e5a0 (tShell): Created /dtnf2/ OK
0x170e5a0 (tShell): Created /dtnf3/ OK

DUMPING new Dtn2Master

dtnMaster dtnfA  dtnMsgQ=0 msgs
baseShmemA32 = 0xc2900000, lenSram = 0x100000
V210 identifier: VMEIDBNLV210      A 0020      May 6 2004....15:16:43.....
irbBlock = 0xc2b00c00, iebBlock = 0xc2b00800
baseSoftRegsA32 = 0xc2b00700, irqLevel = 3
From config regs: maxPpmUsers=4 maxDtnChans=4 irqLevel=3 intrptStsId=0x50
From config regs: dtnChan1TO=200 dtnChan2TO=200 dtnChan3TO=200 dtnChan4TO=200
From config regs: fiducialTLEvCd=0x14 UsrResetTLEvCd=0x15

DTCN2_DEV for line 1: /dtnf0/ FilesOpen= 0, FileSched= 0, rmb's= 0; ExecNotSched=0
DTCN2_DEV for line 2: /dtnf1/ FilesOpen= 0, FileSched= 0, rmb's= 0; ExecNotSched=0
DTCN2_DEV for line 3: /dtnf2/ FilesOpen= 0, FileSched= 0, rmb's= 0; ExecNotSched=0
```

```

DTCN2_DEV for line 4: /dtcnF3/ FilesOpen= 0, FilesSched= 0, rmb's= 0; ExecNotSched=0
pendIntEntryIndex = 0, pendIntExtrIndex = 0, irbUseIndex=0 intrptSts=0x5
intrptCnt = 0
intrptCnts(0,1,2,3,4) = 0 0 0 0 0 0
irb U RqPmCdLn pMdb    irb U RqPmCdLn pMdb    irb U RqPmCdLn pMdb    irb U RqPmCdLn pMdb
7f 0 00000000 00000000 77 0 00000000 00000000 6f 0 00000000 00000000 67 0 00000000 00000000
7e 0 00000000 00000000 76 0 00000000 00000000 6e 0 00000000 00000000 66 0 00000000 00000000
7d 0 00000000 00000000 75 0 00000000 00000000 6d 0 00000000 00000000 65 0 00000000 00000000
7c 0 00000000 00000000 74 0 00000000 00000000 6c 0 00000000 00000000 64 0 00000000 00000000
7b 0 00000000 00000000 73 0 00000000 00000000 6b 0 00000000 00000000 63 0 00000000 00000000
7a 0 00000000 00000000 72 0 00000000 00000000 6a 0 00000000 00000000 62 0 00000000 00000000
79 0 00000000 00000000 71 0 00000000 00000000 69 0 00000000 00000000 61 0 00000000 00000000
78 0 00000000 00000000 70 0 00000000 00000000 68 0 00000000 00000000 60 0 00000000 00000000
pil RmPmCdLn pMdb    irb pil RmPmCdLn pMdb    irb pil RmPmCdLn pMdb    irb pil RmPmCdLn pMdb    irb
7f 00000000 00000000 -- 5f 00000000 00000000 -- 3f 00000000 00000000 -- 1f 00000000 00000000 --
7e 00000000 00000000 -- 5e 00000000 00000000 -- 3e 00000000 00000000 -- 1e 00000000 00000000 --
7d 00000000 00000000 -- 5d 00000000 00000000 -- 3d 00000000 00000000 -- 1d 00000000 00000000 --
7c 00000000 00000000 -- 5c 00000000 00000000 -- 3c 00000000 00000000 -- 1c 00000000 00000000 --
7b 00000000 00000000 -- 5b 00000000 00000000 -- 3b 00000000 00000000 -- 1b 00000000 00000000 --
7a 00000000 00000000 -- 5a 00000000 00000000 -- 3a 00000000 00000000 -- 1a 00000000 00000000 --
79 00000000 00000000 -- 59 00000000 00000000 -- 39 00000000 00000000 -- 19 00000000 00000000 --
78 00000000 00000000 -- 58 00000000 00000000 -- 38 00000000 00000000 -- 18 00000000 00000000 --
77 00000000 00000000 -- 57 00000000 00000000 -- 37 00000000 00000000 -- 17 00000000 00000000 --
76 00000000 00000000 -- 56 00000000 00000000 -- 36 00000000 00000000 -- 16 00000000 00000000 --
75 00000000 00000000 -- 55 00000000 00000000 -- 35 00000000 00000000 -- 15 00000000 00000000 --
74 00000000 00000000 -- 54 00000000 00000000 -- 34 00000000 00000000 -- 14 00000000 00000000 --
73 00000000 00000000 -- 53 00000000 00000000 -- 33 00000000 00000000 -- 13 00000000 00000000 --
72 00000000 00000000 -- 52 00000000 00000000 -- 32 00000000 00000000 -- 12 00000000 00000000 --
71 00000000 00000000 -- 51 00000000 00000000 -- 31 00000000 00000000 -- 11 00000000 00000000 --
70 00000000 00000000 -- 50 00000000 00000000 -- 30 00000000 00000000 -- 10 00000000 00000000 --
6f 00000000 00000000 -- 4f 00000000 00000000 -- 2f 00000000 00000000 -- 0f 00000000 00000000 --
6e 00000000 00000000 -- 4e 00000000 00000000 -- 2e 00000000 00000000 -- 0e 00000000 00000000 --
6d 00000000 00000000 -- 4d 00000000 00000000 -- 2d 00000000 00000000 -- 0d 00000000 00000000 --
6c 00000000 00000000 -- 4c 00000000 00000000 -- 2c 00000000 00000000 -- 0c 00000000 00000000 --
6b 00000000 00000000 -- 4b 00000000 00000000 -- 2b 00000000 00000000 -- 0b 00000000 00000000 --
6a 00000000 00000000 -- 4a 00000000 00000000 -- 2a 00000000 00000000 -- 0a 00000000 00000000 --
69 00000000 00000000 -- 49 00000000 00000000 -- 29 00000000 00000000 -- 09 00000000 00000000 --
68 00000000 00000000 -- 48 00000000 00000000 -- 28 00000000 00000000 -- 08 00000000 00000000 --
67 00000000 00000000 -- 47 00000000 00000000 -- 27 00000000 00000000 -- 07 00000000 00000000 --
66 00000000 00000000 -- 46 00000000 00000000 -- 26 00000000 00000000 -- 06 00000000 00000000 --
65 00000000 00000000 -- 45 00000000 00000000 -- 25 00000000 00000000 -- 05 00000000 00000000 --
64 00000000 00000000 -- 44 00000000 00000000 -- 24 00000000 00000000 -- 04 00000000 00000000 --
63 00000000 00000000 -- 43 00000000 00000000 -- 23 00000000 00000000 -- 03 00000000 00000000 --
62 00000000 00000000 -- 42 00000000 00000000 -- 22 00000000 00000000 -- 02 00000000 00000000 --
61 00000000 00000000 -- 41 00000000 00000000 -- 21 00000000 00000000 -- 01 00000000 00000000 --
60 00000000 00000000 -- 40 00000000 00000000 -- 20 00000000 00000000 -- 00 00000000 00000000 --

Event Mask Table:
0000: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x10: 0 0 0 0 1 1 1 1 1 1 0 0 0 0 0 0
0x20: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x30: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x40: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x50: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x60: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x70: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x80: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0x90: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0xa0: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0xb0: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0xc0: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0xd0: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0xe0: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0xf0: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

status bytes blocks avg block max block
----- -----
current
  free 983024      1 983024 983024
  no allocated blocks
cumulative
  no allocated blocks
value = 0 = 0x0

```

11. Enter the following commands to open datacon channel 1, prepare a buffer of 10 words for writing, execute 10 datacon writes and reads, and close channel 1.

```
-> Xopen 1
-> Xwrite 10
-> Xread
-> Xclose 1
```

Expected results:

- The output produced is similar to the output shown below. Response duration greater than 400 microseconds indicates a datacon timeout. This is expected on unused Hulliger bucket addresses. The lines shown below with duration of 251 and 254 indicate valid Hulliger bucket hardware responses.
- The V210 Datacon Active LED flashes when the Xread command is executed, indicating that Datacon words were transmitted on the line.

```
-> Xopen 1
0x170e5a0 (tShell): Have opened /dtcnF0/xtest; fd = 35
value = 32 = 0x20 = ''
-> Xwrite 10
0 0x20000000
1 0x20800000
2 0x21000000
3 0x21800000
4 0x22000000
5 0x22800000
6 0x23000000
7 0x23800000
8 0x24000000
9 0x24800000
0x170e5a0 (tShell): X file (fd=35) written: 10 words => 40 bytes; write() returned 40
value = 32 = 0x20 = ''
-> Xread
0x170e5a0 (tShell): Xread: xLen=10; tried to read 88 bytes, & got 88 bytes
0: 0x0030a310 0x0030b1e8 duration=3800
2: 0x7ff80050 0x0401a40b duration=251
4: 0x7ff80050 0x0401a509 duration=254
6: 0000000000 0x0201a6a3 duration=410
8: 0000000000 0x0201a83f duration=412
10: 0000000000 0x0201a9da duration=411
12: 0000000000 0x0201ab76 duration=412
14: 0000000000 0x0201ad11 duration=411
16: 0000000000 0x0201aeac duration=411
18: 0000000000 0x0201b045 duration=409
20: 0000000000 0x0201b1e0 duration=411
value = 39 = 0x27 = ''
-> Xclose 1
value = 0 = 0x0
->
```

12. Connect the coax cable to each of the 4 Datacon Driver Assembly Lines and repeat the previous test.

Line 2

```
-> Xopen 2  
-> Xwrite 10  
-> Xread  
-> Xclose 2
```

Line 3

```
-> Xopen 3  
-> Xwrite 10  
-> Xread  
-> Xclose 3
```

Line 4

```
-> Xopen 4  
-> Xwrite 10  
-> Xread  
-> Xclose 4
```

Connect the coax cable to Line 1 after completing these tests.

13. Enter the following command to configure the datacon master to execute 100 transmissions on every 1 Hz AGS event (event code 76) to datacon line 1 address 0x40, and repeat for 200 consecutive events. Status will be printed every 10<sup>th</sup> execution.

```
-> Xstress1 1, 0x40, 76, 100, 200, 10
```

Expected results:

- a. The output produced is similar to the output shown below. Zero data errors are expected.
- b. The V210 Datacon Active LED flashes every 1 second, indicating that the transmission is executed.

```
-> Xstress1 1, 0x40, 76, 100, 200, 10  
Stress1 Executing 200 repetitions of 100-xmission blocks  
For line 1, address 0x40, TimeLineCode 0x4c
```

Hulliger at 0x40 has been put into loopback mode

```
dumpDtcnFile: (@0x0177e988) /dtcnF0/stress1 on line 1 of master dtcnFA  
dumpDtcnFile: ppmUser=0 evCode=0 rmbRptCnt=0 irbNdx=-1, schedFlag=0  
rewriteWhileSched=0, writeMdbIndex=0  
multiMdbLimit=-1, activeMdbIndex=-1, execMdbIndex=-1  
dumpMdbRec[0]: pMdb=0xc2bffe98(0x100ffe98), pSmb=0xc2bffe88(0x100ffe88)  
dumpMdbRec[0]: smbWordsAlloc/Wrote=2/1, mdbReady=0, rmbIndexReading=-1  
dumpMdbRec[0]: pRmb[0] {addr(MstrAddr)/Rdy}: 0xc2bffe70(0x100ffe70)/-1  
dumpMdbRec[0]: Mdb: mdbNdx=0, smbElemCount=1, rmbRepeatCount=0,  
rmbRepeatIndex=0  
dumpMdbRec[0]: Mdb: pSmb=0x100ffe88  
dumpMdbRec[0]: Mdb: pRmb[0]=0x100ffe70
```

```

/dtcnF0/stress1 fd=37

dumpDtcnFile: (@0x0177e988) /dtcnF0/stress1 on line 1 of master dtcnFA
dumpDtcnFile: ppmUser=0 evCode=0 rmbRptCnt=-1 irbNdx=-1, schedFlag=0
rewriteWhileSched=0, writeMdbIndex=0
multiMdbLimit=-1, activeMdbIndex=-1, execMdbIndex=-1
dumpMdbRec[0]: pMdb=0xc2bffe98(0x100ffe98), pSmb=0xc2bffffcf8(0x100ffcf8)
dumpMdbRec[0]: smbWordsAlloc/Wrote=101/100, mdbReady=0, rmbIndexReading=-1
dumpMdbRec[0]: Mdb: mdbNdx=0, smbElemCount=1, rmbRepeatCount=-1,
rmbRepeatIndex=0
dumpMdbRec[0]: Mdb: pSmb=0x100ffcf8

          block  block  block  block  block  block  xmsn  xmsn  xmsn  xmsn
line  addr  code  reps   DAC    DNA   NOR    ILL   DAC    DNA   ILL   DATERR
  1  0x40  0x4c      1     0     0     1     0     0     0     0     0     0
  1  0x40  0x4c      11    0     0    11    0     0     0     0     0     0
  1  0x40  0x4c      21    0     0    21    0     0     0     0     0     0
  1  0x40  0x4c      31    0     0    31    0     0     0     0     0     0
  1  0x40  0x4c      41    0     0    41    0     0     0     0     0     0
  1  0x40  0x4c      51    0     0    51    0     0     0     0     0     0
  1  0x40  0x4c      61    0     0    61    0     0     0     0     0     0
  1  0x40  0x4c      71    0     0    71    0     0     0     0     0     0
  1  0x40  0x4c      81    0     0    81    0     0     0     0     0     0
  1  0x40  0x4c      91    0     0    91    0     0     0     0     0     0
  1  0x40  0x4c     101   0     0   101   0     0     0     0     0     0
  1  0x40  0x4c     111   0     0   111   0     0     0     0     0     0
  1  0x40  0x4c     121   0     0   121   0     0     0     0     0     0
  1  0x40  0x4c     131   0     0   131   0     0     0     0     0     0
  1  0x40  0x4c     141   0     0   141   0     0     0     0     0     0
  1  0x40  0x4c     151   0     0   151   0     0     0     0     0     0
  1  0x40  0x4c     161   0     0   161   0     0     0     0     0     0
  1  0x40  0x4c     171   0     0   171   0     0     0     0     0     0
  1  0x40  0x4c     181   0     0   181   0     0     0     0     0     0
  1  0x40  0x4c     191   0     0   191   0     0     0     0     0     0

          block  block  block  block  block  block  xmsn  xmsn  xmsn  xmsn
line  addr  code  reps   DAC    DNA   NOR    ILL   DAC    DNA   ILL   DATERR
  1  0x40  0x4c      200    0     0   200    0     0     0     0     0     0
value = 78 = 0x4e = 'N'
->

```

14. Connect the coax cable to each of the 4 Datacon Driver Assembly Lines and repeat the previous test.

#### Line 2

```
-> Xstress1 2, 0x40, 76, 100, 200, 10
```

#### Line 3

```
-> Xstress1 3, 0x40, 76, 100, 200, 10
```

#### Line 4

```
-> Xstress1 4, 0x40, 76, 100, 200, 10
```

Connect the coax cable to Line 1 after completing these tests.